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Notice of Allowability

Application No.

10/646,722

Examiner

Joseph W. Drodge

Applicant(s)

KIM ET AL.

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed 6/12/06.
2. ☒ The allowed claim(s) is/are 25, now renumbered claim 1.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/605,635.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

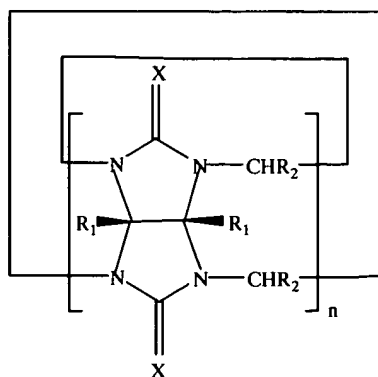
- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>0706</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

The Affidavit under 37 CFR 1.132 filed 6/12/2006 is sufficient to overcome the rejection of claim 25, as amended by the Examiner's Amendment which follows, based upon the applied prior art of record.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Claim 25 has been amended as follows: --

25. (Currently Amended) A method of ~~using cucurbituril derivatives in~~ removing organic dyes from waste water, heavy metal from water ~~and or~~ radioactive isotopes from radioactive ~~wastes~~ waste comprising contacting the waste water, water, or radioactive waste with a product comprising a mixture of cucurbituril derivatives and removing a complex formed between a cucurbituril derivative and the organic dye, heavy metal, or radioactive isotope, wherein the cucurbituril derivatives have the formula (1),



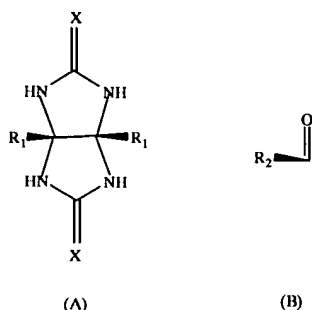
...(1)

where X is O, S or NH; ~~R1 and R2~~ R₁ and R₂ are independently selected from the group consisting of hydrogen, alkyl groups of 1 to 30 carbon atoms, alkenyl groups of 2 to 30 carbon atoms, alkynyl groups of 2 to 30 carbon atoms, alkylthio groups of 1 to 30 carbon atoms, alkylcarboxyl groups of 2 to 30 carbon atoms, hydroxyalkyl groups of 1 to 30 carbon atoms,

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alkylsilyl groups of 1 to 30 carbon atoms, alkoxy groups of 1 to 30 carbon atoms, haloalkyl groups of 1 to 30 carbon atoms, nitro group, alkylamine groups of 1 to 30 carbon atoms, amine group, aminoalkyl groups of 1 to 30 carbon atoms, unsubstituted cycloalkyl groups of 5 to 30 carbon atoms, cycloalkyl groups of 4 to 30 carbon atoms with hetero atoms, unsubstituted aryl groups of 6 to 30 carbon atoms, and aryl groups of 6 to 30 carbon atoms with hetero atoms; and n is an integer from 4 to 20, and

wherein the cucurbituril derivatives are prepared by,



(a1) adding 3 to 7 moles of an acid to 1 mole of compound (A) having the formula (A) to form a mixture, adding 2 to 20 moles of an aldehyde of formula (B) to the mixture, and stirring the mixture at 70 to 95°C; and

(b1) stirring the reaction mixture at 95 to 105°C to complete the reaction to form the product comprising a mixture of cucurbituril derivatives wherein 5 to 30% of the cucurbituril derivatives have n=5, 30 to 70% of the cucurbituril derivatives have n=6, 5 to 30% of the cucurbituril derivatives have n=7, 2 to 15% of the cucurbituril derivatives have n=8, and 1 to 10% of the cucurbituril derivatives have n=9 to 20.

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Claim 26 has been canceled.

The following is an examiner's statement of reasons for allowance: Claim 25 now distinguishes over the applied prior art of record in view of claiming of a mixture of cucurbituril derivatives comprising discrete percentages of derivatives where "n" equals 5,6,7,8 and 9-20, respectively. Such mixture of derivatives is considered to non-obviously more efficiently remove organic dyes and heavy metals from water and radioactive waste, as detailed in the examples starting at page 26 of the Instant Specification and also summarized in the Affidavit filed 6/12/2006. The amendments to the claim concerning forming of a discrete mixture of derivatives is supported by the Instant Specification at page 9, lines 7-14 and page 11, line 23-page 12, line 7, as well as various of the Examples.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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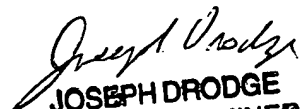
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

July 10, 2006


JOSEPH DRODGE
PRIMARY EXAMINER